

IV. Grant Specifics

Section A. Common Criteria

Instructions: Answer all questions in this section by typing the answer below the question. It is anticipated that completed applications will result in additional pages.

1. Describe your goal (which must be based on evaluating the feasibility of developing a water conservation, reuse or storage project) and how this study helps to achieve the goal.

Past efforts by state and regional leaders have led to the formation of a group and an effort that is honestly and truthfully committed to fixing the water supply problems that have hindered Northeast Oregon's progress for over 30 years. The region has defined a pathway to success and has invested time and resources into memorializing and pursuing that pathway. With a little help and a little jump start it appears that the region is poised to fix their water supply and environmental problems in a methodical manner that prevents unintended consequences in the rest of the state and that promotes environmental gains in the Columbia River tributaries upstream from mainstem points of diversion in Northeast Oregon.

To ensure a fix requires vision, time, incremental gains and patience. Therefore Northeast Oregon Water Association (NOWA) has memorialized a plan that takes these four values into consideration, and hopefully sets us on a path that defines success and provides the means and accountability necessary to pursue success over the next five years and beyond.

2014-2019 Performance Measures:

1. *A business plan and permit to pursue a 500 cfs increment of mainstem Columbia River water for use in Northeast Oregon*
2. *Catalyst short term water, mainline water delivery infrastructure constructed and penetrating three critical groundwater regions in the west, central and east irrigated agricultural areas of the Umatilla Basin*
3. *Basalt Bank developed and operational*
4. *Decreased reliance on native basalt aquifers and localized areas of gradual basalt aquifer recovery witnessed*

Needs:

1. *Clarity on a lead entity and how it will formally work with regional interests to assist in short, near and long-term projects, including mitigation strategies*
2. *Development of a catalyst amount of water (+/- 1/3 of total demand) in the next two years*
3. *A water "delivery infrastructure" funding program/package to ensure water supplies penetrate into key areas of need*
4. *Implementation of the "Basalt Bank" program as the value multiplier to conjunctive management and sustainable water use in northeast Oregon*

The four needs above and the performance measures over the next five years address a means to an end, at least for the foreseeable future. They target a long-term, packaged, fix to Umatilla Basin water needs and provide ancillary opportunities for other basins in Northeast Oregon to meet economic and environmental goals of their own.

An enhanced appraisal and feasibility level study of Juniper Canyon Reservoir is one of options identified by the Columbia River – Umatilla Solutions Task Force (CRUST) to provide the permanent water necessary to meet the 500cfs targeted demand in the Umatilla Basin.

2. Describe the water supply need(s) that the project associated with the planning study is intended to meet. Applicant should reference supporting documentation that would be available upon request.

Efforts of the CRUST identified a total, long-term demand in the Umatilla Basin of 1,000 cfs. Currently, due to pumping costs, infrastructure constraints and various other limiting factors, a realistic, reachable target for the Umatilla Basin is 500 cfs. Juniper Canyon reservoir, in conjunction with other small and large projects, can meet the peak summertime demand targeted by NOWA needed for increased economic development in Northeast Oregon as well as commence native aquifer recovery and relieve pressures on the over-appropriated reaches of the Umatilla River and its tributaries.

3. Explain how the project associated with the planning study will meet the water supply need(s), and indicate what percentage of that need will be met. (For example: If your water supply need is 20,000 acre-feet of additional water and the project will supply 10,000 additional acre-feet, 50% of your need will be met).

Initial design estimates of the new Juniper Dam site is approximately 120,000 acre-feet. This water will be pumped in the winter and early spring when fish flow targets in the Columbia River are being met and utilized in the summer for irrigation either through direct supply out of the reservoir or as a bucket-for-bucket mitigation source in the mainstem. If the larger storage Juniper Canyon storage site is confirmed as suitable for a surface storage impoundment it could meet 93 days of the 150 days of demand in the Umatilla Basin.

4. Describe the technical aspects of the planning study and why your approaches are appropriate for accomplishing the goal of the planning study.

Technical aspects of the study involve coordination with energy providers regarding hydropower and energy storage potential. Additionally, there are 5 key engineering design questions that need to be answered including site suitability and geologic considerations, dam construction methods, supply and conveyance size and capacity and energy demand. The work tasks below provide more detail regarding technical aspects to be addressed.

5. Describe how the planning study will be performed. Include:

- a. General summary statement that describes the study progression.
- b. When the planning study could begin.

The planning study has already begun. The initial study was completed in 2006

- c. Listing of Key Tasks to be accomplished with each task having:
 - i. Title
 - ii. Timeline for completion
 - iii. Description of the activities to be performed in this key task

Task #1: Identify Water Demand Regions, Secure Water User Subscriptions, Secure Financial Contributions (NOWA)

Timeline: August, 2013 – June, 2014

Activities to be performed: Develop water demand regions and secure water user subscriptions for each regions to better define water demand, infrastructure and operations limitations geographically. Utilize subscription list as the buy-in for future project assessment and development.

Task #2: Develop a Demand Report including Potential Columbia River Diversion Rates for Consumptive Use and Mitigation Supply Requirements (NOWA)

Timeline: February, 2014 – July, 2014

Activities to be performed: A map of proposed diversions and the max summertime rate of each diversion and a concept level assessment of water delivery infrastructure

Task #3: Develop List of Mitigation Options, Assess Permitting Options and Feasibility of Obtaining Mitigation Based Columbia River Water Rights (NOWA)

Timeline: February, 2014 – July, 2014

Activities to be performed: A Mitigation narrative to be included on a future water right application including the framework and cost projections for mitigation credits

Task #4: Complete Initial Investigation of Alternative Juniper Canyon Reservoir Site (Integral Consulting, Local Water Users)

Timeline: July, 2013 to March, 2014 (COMPLETE)

Activities to be performed: Initial investigative report detailing possible point of diversion, dam location, storage capacity and conveyance system.

Task #5: Enhanced Appraisal and Feasibility Project Management, Preparation and Conducting Meetings (NOWA/Integral)

Timeline: April, 2014 – February, 2015

Activities to be performed:

Several contractors will be retained to complete the various sections of the study. Additionally, the project includes holding a number of meetings with local stakeholders, State agencies, and energy companies. This task includes management of these activities, preparing for and conducting the meetings, and providing OWRD the required quarterly reporting and work completion invoices.

Task #6: Energy Supply & Cost Options Analyses (NOWA/Integral) – within 3 to 6 months of funding release

Timeline: August 2014 – February, 2015

Activities to be performed:

- a. Review power load-management and energy storage options with the Bonneville Power Administration*
- b. Review hydropower buyback options with the local utilities UEC and PacifiCorp, and BPA*
- c. Review local power exchange options with UEC*

- d. Evaluate sources of supply options including UEC, PacifiCorp, dedicated renewable sources such as wind and solar, dedicated leveling sources such as natural gas, and a mixed-approach.
- e. Rank power supply options in terms of implementability, timeline, and cost

Task #7: Dam Engineering Concept-Level Cost Refinement (Integral)

Timeline: August, 2014 to January, 2015

Activities to be performed: The purpose of this task is to refine the initial cost estimate developed by project proponents. This task will consist of the following activities:

- f. Review the assumptions and calculations of the initial cost estimate. Recheck initial cost comparisons between Concrete Faced Rock Dam and Asphaltic Core Rock dam.
- g. Conduct a site visit to:
 - Evaluate best location for dam placement in canyon
 - Conduct a reconnaissance of the dam contacts along the valley bottom and abutments to assess viability and feasibility of constructing a phynt and cutoff along contacts
 - Review borrow areas to ensure there is ample borrow material available to construct a rock dam
 - Review dam site access to ensure assumptions regarding costs are correct
- h. Revise and improve initial CAD drawings and coverage. Create simple conceptual design drawings of dam and spillway to allow stakeholders to visualize what dam will look like. These will be limited and be composed a few drawings to allow for stakeholders to understand the project specifics.
- i. Revise the cost estimate as needed. This is an initial engineer's cost estimate.
- j. Write a Technical Memorandum that will include:
 - Review of assumptions,
 - Site visit findings
 - Updated drawings
 - New revised cost estimate
 - Include improved CAD as part of deliverable
 -

Task #8: Conveyance System Concept-Level Cost Refinement (Integral/CZE Engineering)

Timeline: July, 2014 to January, 2015

Activities to be performed: This task includes a site visit and refinements of the initial estimates of the cost of constructing, and operation and maintenance, of the water conveyance system between Columbia River and the reservoir, and between the reservoir and the point of supply to the farms. Initial cost values were previously developed by project proponents. This task serves to provide the needed accuracy, and identify critical challenges and opportunities, before a full-scale feasibility study can be completed. The cost analysis will be completed for the conceptual pipeline route and pump station locations shown on the attached figure. Completion of this task will be based on the information regarding landownership and easement requirements identified in Task 5.

Task #9: Preliminary Assessment of Implementation Needs (NOWA/Integral)

Timeline: September, 2014 to February, 2015:

- k. *Identify land ownership & easement requirements – The information on land ownership will be obtained from the Umatilla County planning department and the key private and public easements that will be required for the project will be identified.*
- l. *Identify permitting needs – A variety of County, State, and federal permits may be required for the project. The key permits and their requirements will be determined.*
- m. *Initial geologic assessment – An initial review of publicly-available geologic information will be conducted to identify geologic fault lines, folds, and basalt sequences, depths, and thicknesses in the area of the dam and reservoir.*
- n. *Identify key legal and administrative requirements – Options on key legal and administrative needs that may be needed to own and operate the project infrastructures will be identified.*
- o. *Identify advantageous financing options and strategies – The initial construction and annual O&M cost of the project over its expected useful life will have to be understood well enough in order to have an informed discussion on the cost apportionments between potential project stakeholders. This task includes developing initial financing options for the project for stakeholder decisionmaking.*
- p. *Identify anticipated timeline for project implementation: The above information will be used to get an initial assessment of the permitting, financing, and construction timelines, and life expectancy of the project.*

Task #10: Develop a Report of Findings and Recommendations (NOWA, Integral, CZE and McMillan)

Timeline – March, 2015

Activities to be performed: The findings of the above tasks will be included in a report which will include narrative, graphical, and tabular descriptions of the findings and the conclusions and recommendations.

- 6. Provide data and information on the associated project and the project's sources of water supply:
 - a. The location of the associated project. (Include the basin, county, township, range and section.)
 - Basin: Columbia River – At Mouth of Juniper Canyon (Watershed ID #30710109*
 - County: Umatilla*
 - Township, Range, Section: 6.00N – 30.00E – 35*
 - (See Attachment A for additional information)*
 - b. The name(s) and river mile(s) of the source water and what they are tributary to, if applicable.
 - Juniper Canyon > Columbia River (See Attachment A)*
 - d. Whether the project will be off-channel or on-channel.
 - The project will be an off-channel Columbia River storage facility. See Attachment*
 - e. Water availability to meet project storage. (Typically, the Department evaluates new storage projects using a 50 percent water availability analysis.)
 - OWRD staff, as part of the initial study of Juniper Canyon in 2006, analyzed the water availability to meet the pump-storage requirements of the project in compliance with Oregon Administrative Rule Chapter 690,*

Division 33. Pursuant to this review OWRD found that Columbia River water availability in the months of October, December, January, February and March is sufficient to meet the demands of the project. A copy of the water availability assessment is provided as Attachment B.

- f. Proposed purposes and uses of stored water.

There will be three key uses of stored water:

- 1) Irrigation*
- 2) Power Generation*
- 3) Fish and Wildlife/Instream Flow Enhancement*

- g. Environmental flow needs and water quality requirements of supply source water bodies.

Pursuant to Oregon Administrative Rule Chapter 690 Division 33 ("Division 33 Rules") water can only be withdrawn from the Columbia River in non-summer months without bucket for bucket mitigation.

7. What local, state or federal project permitting requirements/issues/approvals do you anticipate in order for the planning study to be conducted? If approvals are required, indicate whether you have obtained them. If you have not obtained the necessary permits/governmental approval, describe the steps you have taken to obtain them.

No local, state or federal project permitting requirements/issues/approvals are anticipated with this appraisal study report. As part of this study, a report detailing permit requirements, contractual obligations and required easements and rights-of-way will be completed. The report will also detail the anticipated costs associated with completed all permitting and rights-of-way acquisitions.

8. Describe the level of involvement, interest and/or commitment of different entities associated with the planning study (attach letters of support). Describe how these entities will benefit or be impacted by the planning study.

An enhanced appraisal and feasibility level study of Juniper Dam is one of three long-term consensus based projects identified by the Columbia River – Umatilla Solutions Task Force CRUST and is described specifically on Page 7 of the CRUST Declaration of Cooperation. A copy of the CRUST Declaration of Cooperation is provided for reference as Attachment C..

The Northeast Oregon Water Association, a business support organization comprised of Northeast Oregon ports, counties, cities, higher-education, agricultural and business interests views Juniper Canyon as one of 5 potential permanent water supply projects that warrants additional consideration to meet Northeast Oregon's long-term water supply needs. NOWA's support for the grant application and its past, current and future resource commitments to date represent broad regional support from multiple interest groups.

These entities will benefit from the planning study by ensuring that the best possible water supply project is picked to meet the short and long-term water needs of Northeast Oregon, primarily Morrow, Umatilla and possibly a portion of north Gilliam Counties. The CRUST Declaration of Cooperation and the water development strategy approved by NOWA identify 5 permanent supply projects that warrant additional research:

- Repair of Wallowa Dam*

- *Final assessment, design and feasibility of Juniper Canyon Reservoir*
- *Acquisition of storage capacity of new and existing storage reservoirs in Idaho and Washington*
- *Participation in the Columbia River Treaty Domestic Agenda*
- *International efforts to examine the potential of the Similkameen Reservoir in Canada*

Four of the five projects are undergoing some form of enhanced investigation by local, state and/or federal agencies (Wallowa Dam, Weiser Reservoir-Idaho, the Columbia River Treaty and Similkameen Reservoir). By obtaining the funding necessary to complete the key due diligence on Juniper Canyon Dam it can be assured that any final decisions on a long-term water supply project will be based upon the maximum return on investment in economic and ecological improvement. Ensuring an informed decision has significant value to both the private and public sectors ensuring the best return on investment of private and/or public investment.

9. Identify when matching funds will be secured and the term of matching funds availability.

Significant matching funds to this effort have already been expended or secured pursuant to the budget and work of the Northeast Oregon Water Association to develop a short and long-term implementation strategy for Umatilla Basin water development. In addition to matching funds already expended on portions of the water development feasibility project, additional match will be secured no later than May, 2014.

10. Provide a description of the relevant professional qualifications and/or experience of the person(s) that will play key roles in performing the planning study. If the personnel have not been decided upon, include a description of the professional qualifications and/or experience of the person(s) you anticipate will play key roles in performing the planning study.

The Northeast Oregon Water Association

The Northeast Oregon Water Association will serve as grant manager and contract manager. Its Board is comprised of key business, economic development and agricultural leaders in Northeast Oregon with years of water development and large project development experience. The NOWA Board is as follows:

Craig Reeder, Chair – Vice-President of Hale Farms

Gary Neal, Vice, Chair – General Manager, Port of Morrow

Bob Levy, Secretary – WindyRiver Farms

Jake Madison – Madison Ranches

Luke Maynard – Boardman Tree Farms

J.R. Cook, Founder and Director of NOWA, has been working on Columbia River water planning and development efforts for over 12 years. Mr. Cook has significant water project planning experience and federal and state grant management experience.

Anna Aylett, NOWA Public Relations, will serve as the outreach lead, including updates to the NOWA website. Anna worked as a journalist for the Capital Press and East Oregonian and currently provides

outreach assistance to NOWA, the Port of Morrow, Oregon Water Coalition and Eastern Oregon Woman's Coalition.

Integral Consulting

Integral Consulting, Inc. www.integral-corp.com (Integral) will be contracted to complete the technical portions of the study. Additionally, Integral will retain the firms of McMillen, LLC www.mcmillen-llc.com (McMillen) and Cooper Ziets Engineers www.coopercm.com (CZE) to complete certain specialized tasks as described below.

Said Amali Ph.D., PE, a Senior Managing Engineer with Integral, will be the technical lead and project manager. He has been involved with water supply planning and engineering in the Umatilla Basin for many years. He identified the location for the dam and reservoir, conducted the initial reconnaissance evaluation of the storage opportunities, and worked with staff from the other two firms listed above to complete the initial system layouts and estimations of the infrastructure cost and implementation options. Said will be supported by a group of engineers, geologists, GIS specialists, and other support staff for this project. They will complete Tasks 5, 6, and part of 1, 2 and 4. Said will work directly with J.R. Cook and the Northeast Oregon Water Association to complete the project.

McMillen and CZE will provide qualified engineers and other support staff to this project, including E. George Robison, Ph.D., PE, and Paul Knox, PE, respectively. These staff worked directly with Said Amali on the early engineering concepts and cost estimates and are available to help with this project's tasks. Dr. Robison and his staff at McMillen will complete Task 3 – Dam Engineering Concept-Level Cost Refinement. Mr. Knox and his staff at CZE will assist with completion of Task 4 – Conveyance System Concept-Level Cost Refinement.

Coordinating Entities

Bonneville Power Administration

NOWA will continue to coordinate with BPA on the energy generation options of Juniper Canyon reservoir, primarily working through Crystal Ball as the Oregon Liaison to access experts in the fields of energy storage, hydropower, fish and wildlife and demand response. NOWA continues to work collaboratively with BPA to assess the feasibility of multi-beneficial storage projects and will solicit their advice and assistance where applicable to assess the best feasible energy generation option(s) associated with Juniper Canyon.

Oregon Water Resources Department

NOWA will coordinate with the Oregon Water Resources Department on permitting and funding alternatives for the primary and secondary uses associated with off-channel Columbia River storage sites. NOWA maintains a pro-active working relationship with OWRD in pursuit of multi-beneficial water supply efforts to fix long-standing problems in the Umatilla Basin.

X Above-Ground Storage

Please answer the following three questions **BEFORE** proceeding:

- Will the project divert greater than 500 acre-feet of surface water annually? Yes No
- Will the project impound surface water on a perennial stream? Yes No
- Will the project divert water from a stream that supports sensitive, threatened or endangered species? Yes No

If you answered "Yes" to any one of these questions, by signature on this application, you are committing to include the following required elements in your planning study.

Describe how you intend to address the required elements in your planning study:

- a) **Analyses of by-pass, optimum peak, flushing and other ecological flows of the affected stream and the impact of the storage project on those flows.**

Juniper Canyon includes an intermittent stream that does not support any threatened or endangered aquatic species. The appraisal level analysis of Juniper Canyon Site 2 includes a peak flow assessment of the Juniper Canyon drainage. The water utilized to fill the Juniper Canyon reservoir will be off-season Columbia River water. Water from the Columbia River is anticipated to be pumped during the months when flows in the Columbia River are deemed legally sufficient for migrating anadromous fish species. State law currently prohibits new withdrawals out of the Columbia River from April 16, to September 30 of each year to protect migrating fish. The appraisal and feasibility level assessment will be completed to ensure that it is in compliance with fish protections and state law.

- b) **Comparative analyses of alternative means of supplying water, including but not limited to the costs and benefits of water conservation and efficiency alternatives and the extent to which long-term water supply needs may be met using those alternatives.**

An more complete appraisal level assessment of Juniper Canyon was the direct result of the CRUST due to the fact that all other short and long-term water supply and conservation opportunities in the Umatilla Basin have more less been exhausted. The Umatilla Basin is already one of the most water efficient regions in the world. Five local and state plans all indicate a need for additional water supply out of the Columbia River as necessary to make any additional progress on recovery of the economic and ecological conditions of the region.

- c) **Analyses of environmental harm or impacts from the proposed storage project.**

A portion of the funds and match utilized as part of this feasibility will be used specifically to consult with local, state, federal and tribal government agencies to identify potential environmental harm of the proposed inundation area. Additional considerations including NOAA "no-take" fish screens on the pump-station, pumping duration and months and water quality will be analyzed during the appraisal and feasibility study.

- d) **Evaluation of the need for and feasibility of using stored water to augment in-stream flows to conserve, maintain and enhance aquatic life, fish life and any other ecological values.**

The CRUST recommendation to further study this project is the direct result of the legal need to mitigate for any additional withdrawals out of the Columbia River in the summer months.

Is the proposed storage project for municipal use?

Yes No

If you answered "Yes," then describe how you intend to address the following required element in your planning study:

- e) **For a proposed storage project that is for municipal use, analysis of local and regional water demand and the proposed storage project's relationship to existing and planned water supply projects.**

N/A

Proceed in answering the following questions:

1. Describe when and to what extent the project associated with the planning study includes provisions for using stored water to augment instream flows to conserve, maintain and enhance aquatic life, fish life or other ecological values.

Environmental enhancements would occur directly at the call of fish and wildlife professionals. Since Juniper Dam would be a management surface storage facility, off-season Columbia River water could be pumped and stored in Juniper Canyon either to be utilized as bucket-for-bucket mitigation necessary for new summertime irrigation demands, or specifically for additional flow enhancement in the Columbia River.

2. Present convincing argument that there are no other reasonably achievable alternatives that would be able to meet the water supply need(s). Applicant may reference supporting documentation that would be available upon request.

Multiple plans and planning efforts have documented the need for additional Columbia River water for consumptive and ecological needs in the Umatilla Basin, culminating with the CRUST Declaration of Cooperation in 2013 and formation of NOWA to coordinate local efforts with State efforts. All plans and assessments completed to date have found that the sustainable development of new Columbia River water supply is necessary to improve economic conditions in Northeast Oregon, recovery native groundwater aquifers to reasonable levels and continue to take pressures off of over-appropriated Columbia River tributaries critical to anadromous fishery enhancements. Additional reference and support materials include:

- *1986 Groundwater Task Force Report*
- *1988 Umatilla Basin Plan*
- *2008 Umatilla Sub-Basin 2050 Water Management Plan and appendices*
- *2008 Umatilla Basin Aquifer Restoration Project Feasibility Report and Economic Impact Study*
- *2012 Economic Impact Analysis completed by Oregon State University*
- *2013 CRUST Declaration of Cooperation and support materials*
- *Various OWRD reports and publications*

V. Match Funding Information

Applicants must demonstrate a minimum dollar-for-dollar match based on the total funding request. The match may include a) secured resources, b) previously expended resources, and/or c) pending resources. For secured funding, you must attach a letter of support from the match funding source that specially mentions the dollar amount shown in the "Amount/Dollar Value" column. For pending resources, documentation showing a request for the matching funds must accompany the application. For resources that have been previously expended, the expenditure must have occurred on or after July 1, 2013. Resources expended prior to July 1, 2013 are not eligible for match purposes.

The Type of matching funds may include:	The Status of matching funds may include:
<ul style="list-style-type: none"> The value of in-kind labor, equipment rental and materials essential to the planning study provided by the applicant or partner*. 	<ul style="list-style-type: none"> Secured funding commitments from other sources.
<ul style="list-style-type: none"> Cash is direct expenditures made in support of the planning study by the applicant. 	<ul style="list-style-type: none"> Associated and documented expenditures for the planning study from non-program sources incurred on or after July 1, 2013.
	<ul style="list-style-type: none"> Pending commitments of funding from other sources. In such instances, Department funding will not be released prior to securing a commitment of the funds from other sources. Pending commitments of the funding must be secured within 12 months from the date of the award.

*"Partner" means a non-governmental or governmental person or entity that has committed funding, expertise, materials, labor, or other assistance to a proposed planning study. OAR 690-600-0010.

Match Funding Source (if in-kind, briefly describe the nature of the contribution)	Type (✓ One)	Status (✓ One)	Amount/ Dollar Value	Date Match Funds Available (Month/Year)
<i>Northeast Oregon Water Association: Regional Water Demand analysis, water delivery infrastructure mapping, user subscription and survey completed from August, 2013 to March, 2014</i>	<input type="checkbox"/> cash <input checked="" type="checkbox"/> in kind	X secured X expended <input type="checkbox"/> pending	\$20,000	
<i>Northeast Oregon Water Association: Market Survey and Columbia River Mitigation Market Report completed from August, 2013 to March, 2014</i>	<input type="checkbox"/> cash <input checked="" type="checkbox"/> in kind	X secured X expended <input type="checkbox"/> pending	\$10,000	
<i>Northeast Oregon Water Association: Complete Columbia River development strategy and plan approval (Attachment ___) including outreach and website development completed August 2013-March, 2014</i>	<input type="checkbox"/> cash <input checked="" type="checkbox"/> in kind	X <input type="checkbox"/> secured X expended <input type="checkbox"/> pending	\$10,000	
<i>Columbia River Water Rights Permitting Mitigation Plan, anticipated completion May, 2014</i>	<input type="checkbox"/> cash <input checked="" type="checkbox"/> in kind	X secured X expended <input type="checkbox"/> pending	\$20,000	
<i>Final Design and Business Plan for three regional Columbia River water delivery projects (east, central and west)</i>	<input type="checkbox"/> cash <input checked="" type="checkbox"/> in kind	secured X expended X pending	\$5,000	\$15,000 to be secured by May 31, 2014

<i>Integral Consulting work to date on Identification of more suitable Juniper Canyon storage site, work with landowner of site and preliminary schematic of pumpstation, pipe and dam design work completed July , 2013 – April, 2014(See maps included as Attachment)</i>	<input type="checkbox"/> cash <input checked="" type="checkbox"/> in kind	<input type="checkbox"/> secured <input checked="" type="checkbox"/> expended <input type="checkbox"/> pending	15,645	
	<input type="checkbox"/> cash <input type="checkbox"/> in kind	<input type="checkbox"/> secured <input type="checkbox"/> expended <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in kind	<input type="checkbox"/> secured <input type="checkbox"/> expended <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in kind	<input type="checkbox"/> secured <input type="checkbox"/> expended <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in kind	<input type="checkbox"/> secured <input type="checkbox"/> expended <input type="checkbox"/> pending		

VI. Project Planning Study Schedule

Estimated Project Duration: August 1, 2013 to June 1, 2015

Place an "X" in the appropriate column to indicate when each Key Task of the project will take place.

Project Planning Study Key Tasks	2014				2015				2016 & Beyond
	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	
<i>Develop regional water demand regions, obtain water user subscriptions and secure financial contributions to Columbia River Water Supply effort</i>	X	X	X	X	-	-	-	-	-
<i>Identify Total Demand, Total Columbia River Diversion Rate and Total Columbia River Mitigation Water Requirements</i>			X	X					
<i>Identify and Develop Mitigation Options Proposal and Assess Feasibility of obtaining new, Mitigated Columbia River Water Rights</i>			X	X					
<i>Complete Initial Investigation of Alternative Juniper Canyon Reservoir Site</i>	X	X	X						
<i>Enhanced Appraisal Study Project Management</i>			x	X	X	X	X		
<i>Energy Supply & Cost Options</i>					X	X	X		
<i>Dam Engineering</i>					X	X	X		
<i>Conveyance System Refinement</i>					X	X	X		
<i>Implementation Assessment</i>					X	X	X		
<i>Report and Recommendation</i>							X		

Request to be added to the Oregon Water Resources Department's
Inventory of Potential Conservation Opportunities

The purpose of this inventory is to catalogue potential conservation projects that water users themselves have identified but not yet pursued because of financial, institutional, or other barriers. For the purpose of this application, water storage other than above-ground are included as conservation opportunities and are most likely capital conservation projects.

As a water provider or user, you know your water demands and water conservation opportunities better than anyone. We would appreciate your assistance with this important data collection effort by completing this survey. Your participation will help provide the building blocks we need to begin to identify and achieve potential future water supplies. Please answer the questions as completely as possible, to the best of your ability. We appreciate your help with this important effort.

This inventory of already-identified, potential conservation projects includes both capital and programmatic projects. Capital projects are defined as one-time, large investments resulting in water savings. Examples include reclaimed water plants, reservoir covering, transmission line upgrades reducing leaks, or industrial engineering modifications to re-use process water. Programmatic projects are defined as ongoing investments resulting in water savings. Examples include facilitating upgrades to more efficient water using devices (e.g., distributing free showerheads, toilet rebates) and distribution system leak detection programs. The conservation inventory is primarily intended to include “planned” projects rather than projects that are currently being implemented. However, currently active programmatic projects may be listed if they will continue or expand in future years. The inventory of projects submitted will be compiled by county or basin.

Examples are provided below.

	Example Capital Conservation Project	Example Programmatic Conservation Project
Project Description Provide brief sentence	Line 3 miles of unlined ditch.	Toilet rebate program for residential customers
Estimated Future Savings Provide brief sentence, including information regarding savings seasonality.	20 acre feet of water per year	If we spend our full budget each year, we estimate 50,000 gallons of water save per year
Seasonality Indicate what part of the year savings are generated (e.g. year-round; summer only; etc.).	Peak (irrigation) season savings.	Savings should occur throughout the year.
Estimated Future Costs Provide brief sentence.	\$500,000 total project costs.	\$40,000 a year.
Implementation Schedule Provide brief sentence.	Not set. Have conducted cost and savings estimate, but still seeking funding.	We started the program in 2005 and plan to implement until 2015.
Project Funded? Designate either “yes”, “no”, or provide brief sentence if necessary	No. Pursuing grant funding.	Yes. IN our CIP through the next 5 years.

To add a project to the inventory of potential conservation opportunities, please provide the following information for each conservation project.

This is a <input type="checkbox"/> Capital Conservation Project <input type="checkbox"/> Programmatic Conservation Project	
Project #/Name	
Project Description	
Estimated Future Savings	
Seasonality	
Estimated Future Costs	
Implementation Schedule	
What are the barriers to implementation, e.g. funding?	
This is a <input type="checkbox"/> Capital Conservation Project <input type="checkbox"/> Programmatic Conservation Project	
Project #/Name	
Project Description	
Estimated Future Savings	
Seasonality	
Estimated Future Costs	
Implementation Schedule	
What are the barriers to implementation, e.g. funding?	

- Include this form with your application -

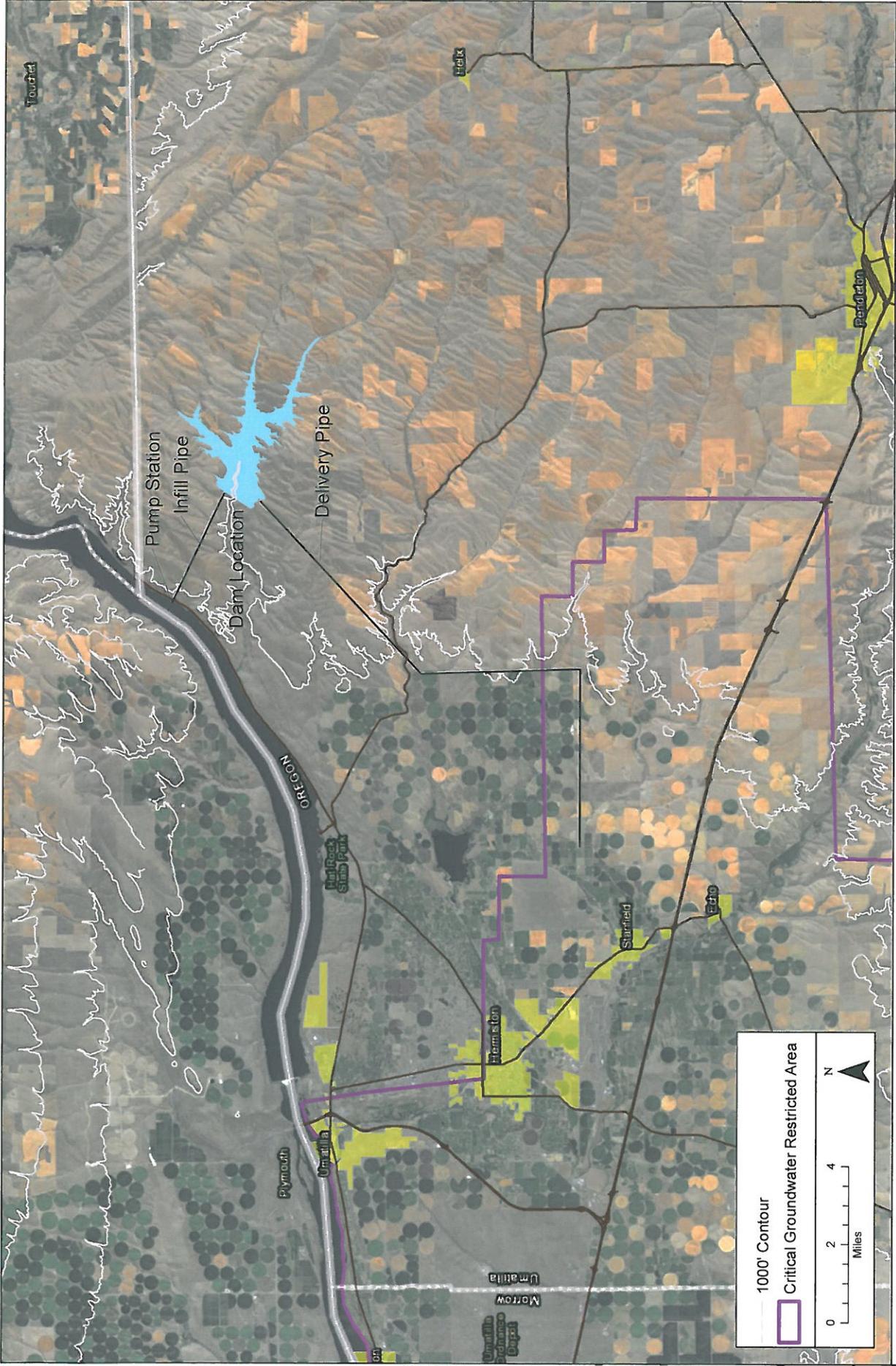


Figure 1.
Juniper Canyon Dam

DRAFT

OREGON

[rebeccad](#)

Water Resources Department

Above Ground Potential Storage Opportunity

Project Name: JUNIPER CANYON
Project Nbr: 1464 **Site Nbr:** 1
Configuration: 1 **Type:** Future project
Information Source: OREGON WATER RESOURCES DEPARTMENT; 2007.
Remarks:

Location Information

County: UMAT [View on a map](#)
Basin: 7 **Off Stream:** No
Stream: JUNIPER CANYON -> COLUMBIA R
T-R-S: 6.00N-30.00E-35
Lat/Long: 45.95395365, -119.02225046
Oregon Lambert (x, y): 1688263.18088 ,1535870.53225
Water Availability Basin: JUNIPER CAN > COLUMBIA R - AT MOUTH
Land Ownership: BLM

Project Information

Purpose:
Drainage Area (sq mi): 66.4 **Annual Yield (ac ft):**
Structure: ROLLER COMPACTED CONCRETE **Dam Height (ft):** 230
Max Pool Elevation(ft): 600 **Max Pool Area (ac):** 214
Inundation Area (ac): **Useable Storage (ac ft):**
Crest Elevation (ft): 610 **Crest Length (ft):** 1150
Total Storage (ac ft): 17600

[View project area characteristics](#)

Associated Documents

<u>Title</u>	<u>Type</u>
AREA CAPACITY CURVE	
AREA CAPACITY TABLE	
CONTOURS	
JUNIPER CANYON 3D	
JUNIPER CANYON GEOLOGY MAP	
JUNIPER CANYON MAP	
JUNIPER CANYON REPORT-- OWRD 2006	
MAP OF SITE	
PEAK FLOW ESTIMATE	

[Return to Above Ground Potential Storage Opportunity Search](#)

Juniper Canyon Dam and Reservoir Initial Assessment

Summary

At the request of State Senator David Nelson, District 29, Oregon Water Resources Department performed an initial assessment of Juniper Canyon to consider the potential for construction of a water storage reservoir. Juniper Canyon is an intermittent stream, tributary to the Columbia River, located in Umatilla County approximately 25 miles northwesterly from Pendleton. The drainage area above the mouth of the Canyon is approximately 70 square miles with 16 inches annual precipitation. As proposed, the project would be filled with water pumped from the Columbia River during winter months. When the water is needed at a later time it could be released back into the Columbia River. The Columbia River would be used as a means of conveyance for water users downstream.

One potential site for a dam in Juniper Canyon is approximately $\frac{3}{4}$ mile above the confluence with the Columbia River. At this time there are a number of issues with this location that are unknown and will require investigation beyond the extent of this initial assessment. However, a dam 320 feet in height at this location could impound up to 49,000 acre-feet of water. A good method for construction of a dam at this location would be roller-compacted concrete (RCC). Depending on many factors that require further investigation, the approximate cost for this structure is estimated to be \$150,000,000. This equates to a little over \$3,000/acre-foot of storage, which is comparable to the cost per acre-foot of storage for other water storage reservoirs.

The state of Washington is considering the potential for construction of water storage sites in the Pine Creek Basin east of Juniper Canyon. Preliminary estimates for those projects are in excess of \$5,000 per acre-foot of storage. In addition to the cost of constructing a reservoir, their projects could involve construction of an 11 mile, large diameter pipeline and pumping station.

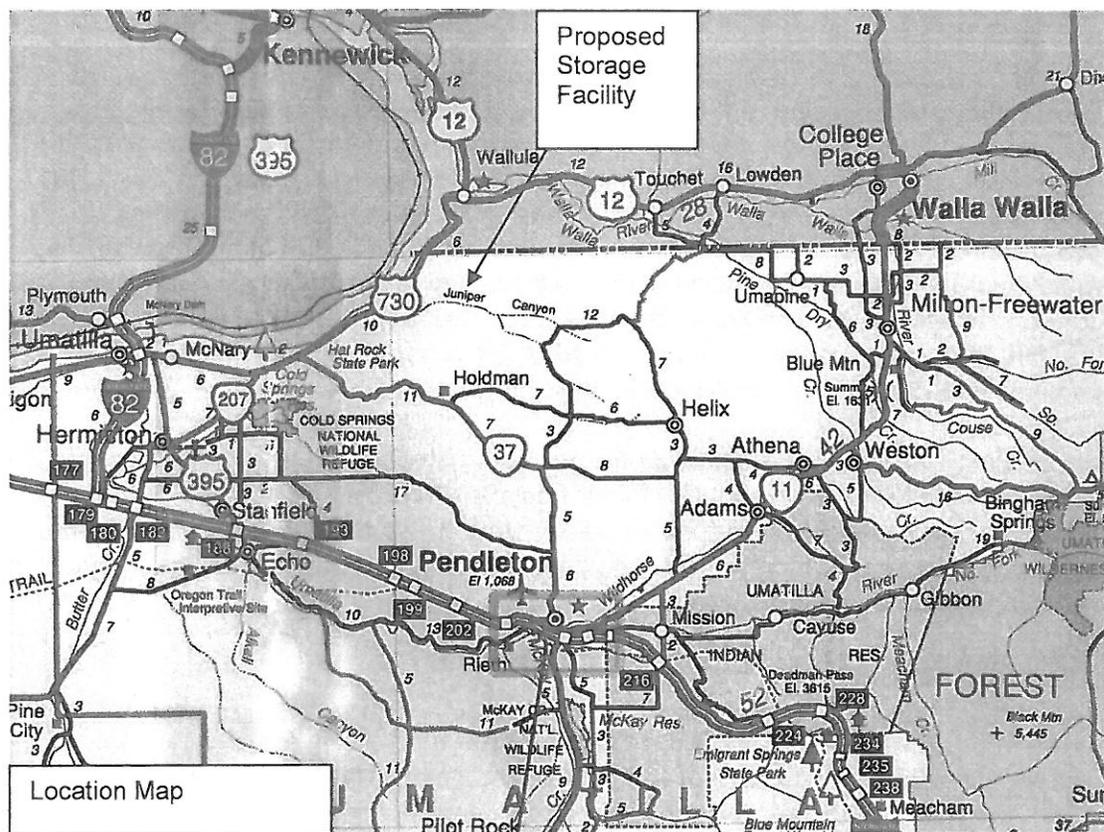
General Information

In eastern Oregon, nearly all surface water that is available during the irrigation season has been appropriated. Although ground water is still available for appropriation in many parts of the state, new appropriations are limited or denied where it is determined new uses will injure existing uses. The future of "new" water use in Oregon will depend substantially on the ability to store water during winter months when it is still available.

One option for new water use is the development of additional reservoir space at locations where water is available, and construction is both financially and environmentally feasible. Umatilla County residents are looking for reliable future water supplies that will help assure future economic growth. One alternative they have identified is construction of surface water impoundments that can be filled from the Columbia River at times when water is available for appropriation. Once placed in

storage, water could be released at times when it is needed back into the Columbia River and then picked up downstream by water users.

Juniper Canyon has been identified by Umatilla County residents as a potential site for a new impoundment facility. Juniper Canyon is located approximately 25 miles northwesterly of Pendleton (see Location Map below). The outlet from Juniper Canyon is located on the Columbia River in Section 35, Township 6 North, Range 30 East, W.M. (Juniper, Oreg-Wash Quad). The proposed site for the dam is approximately $\frac{3}{4}$ of a mile upstream from the outfall, and located above a wetland that is fed by springs. If a dam were constructed to a height of 320 feet above the canyon floor it would impound a reservoir of approximately 49,000 acre-feet capacity and back water nearly $2\frac{1}{2}$ miles up the canyon. A pipeline and pumping facility would be required to fill the reservoir, and to provide a means of releasing water back to the Columbia when it is needed.



The initial capital cost for a project of this size is estimated to be approximately 150 million dollars, or about \$3,000 per acre-foot of storage. There are several unknown factors that will require additional investigation in order to better determine the feasibility of this project. Among those is a complete understanding of the strength of foundation materials, the porosity and permeability of interlayered basalt sequences exposed in the walls of the canyon, the extent of large deposits of sand encountered in the canyon, and the quantity and quality of aggregate in the immediate vicinity available for use as

construction material(s). Additionally, a feasibility study would include development of a clear definition of local, state and federal jurisdictional requirements.

Structure

The type of structure that is likely best suited to the proposed site would be of “roller-compacted concrete.” Roller-compacted concrete, or RCC, takes its name from the method of construction. It is placed with conventional or high-density asphalt paving equipment, and then compacted with rollers. RCC has the same basic ingredient as conventional concrete: cement, water, and aggregates, such as sand, gravel or crushed stone. But unlike conventional concrete, it is a drier mix that can be compacted by vibratory rollers thereby reducing labor and construction costs associated with joints, forms and finishing. Additionally, it typically does not include dowels or steel reinforcing. These characteristics make RCC simple, fast, and economical.

RCC construction has become an accepted standard construction method for dams and dam rehabilitation projects throughout the country and worldwide. Currently, there are several dams in Oregon that are constructed of RCC, three of which are Marmot Dam on the Sandy River built by Portland General Electric to a height of 40 feet, Galesville Reservoir built by Douglas County to a height of 167 feet, and Willow Creek Dam near Heppner built to a height of 165 feet by the Corps of Engineers. Willow Creek Dam has the distinction of being the first RCC dam built in the United States. Elk Creek Dam in the Rogue Basin is another roller-compacted concrete dam that was partially completed by the Corps of Engineers before environmental concerns stopped work. Mill Town Hill in the Umpqua Basin is a 190 feet high, proposed RCC dam that is sponsored by Douglas County.

Juniper Canyon is a fairly narrow, deep canyon draining directly into the Columbia River. A dam constructed within 1 mile from the mouth of the canyon could be built to a height of 320 feet resulting in an impoundment of 49,000 acre-feet. The top of dam elevation would be nearly 700 feet above sea level. Figure 1 is a capacity curve that provides estimated reservoir capacity in relation to elevation above sea level at the proposed dam site.

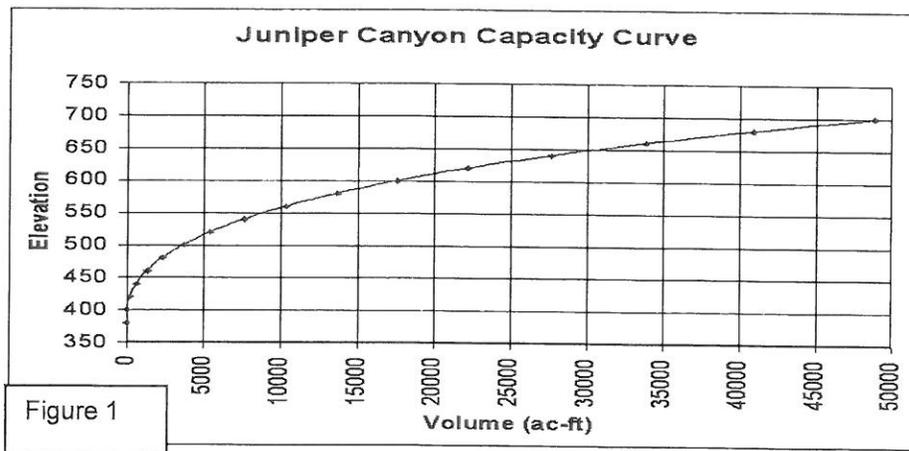


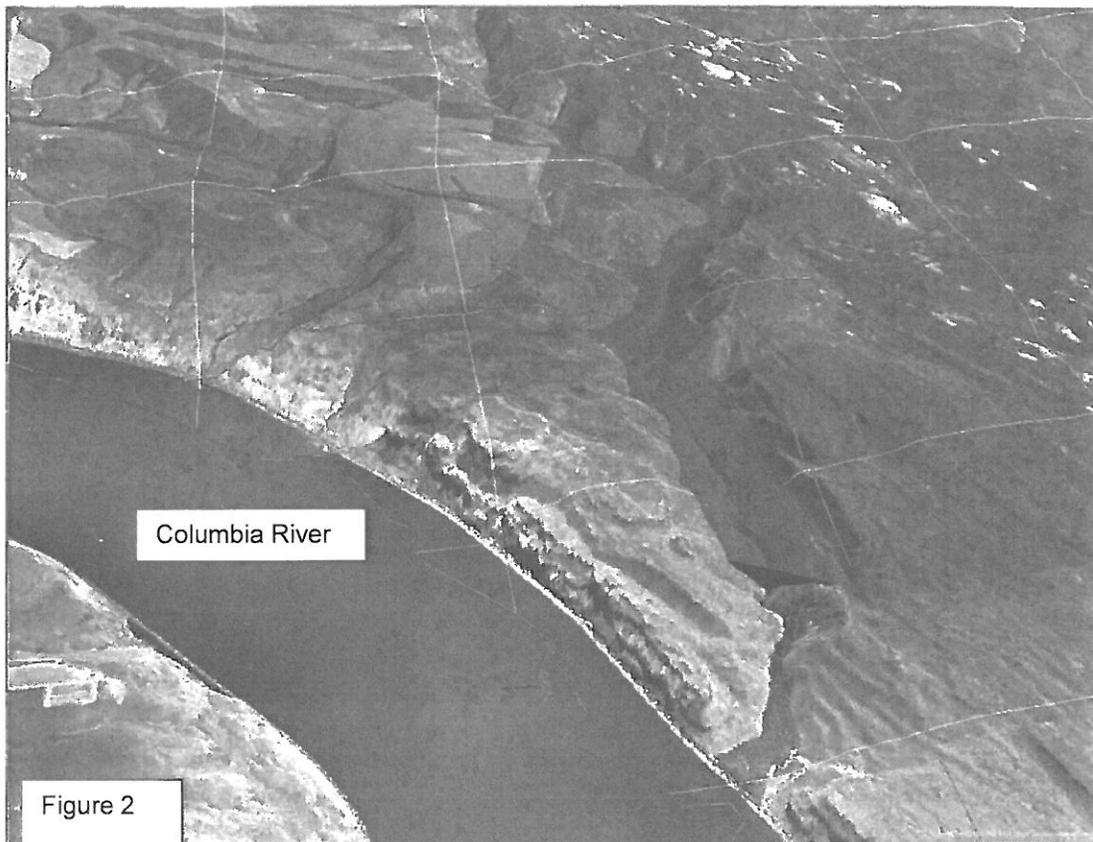
Figure 1

A 320-foot high dam would be 1750 feet long and 20 feet wide at the crest, and construction would require approximately 1.5 million cubic yards of RCC to complete. Although this would be the highest RCC structure yet built in Oregon, other dams in Oregon that were constructed with conventional concrete are higher. The Owyhee Dam in the Owyhee Basin is built of conventional concrete to a height of 417 feet and the Detroit Dam on the Santiam River is approximately 450 feet high.

The four major structural components of the proposed structure include:

- The RCC dam, including construction of an emergency spillway over the top of the structure,
- Low-level outlet conduit and valving needed to drain the reservoir and provide return flow back to the Columbia River,
- A pipe line to transport water from the Columbia River necessary to fill the reservoir,
- A pump station on the Columbia River.

Although not a necessary component of the proposed project, consideration might be given to the potential for generating electricity during times when the dam is releasing water. Such an arrangement could help reduce the long-term costs associated with pumping water into the reservoir. Figure 2 is a computer model of what the proposed project might resemble at full pool.



Geology

Juniper Canyon is located in north central Oregon in an area known in geologic terms as the Columbia Plateau. Photo 1 provides a view downstream from Juniper Canyon looking out across Lake Wallula toward the basalt cliffs on the Washington side of the Columbia River. The conceptual site proposed for a dam and reservoir in Juniper Canyon is characteristic of these Miocene lava flows illustrated in Photo 1 that are associated with the Columbia River Basalt Group (CRBG).

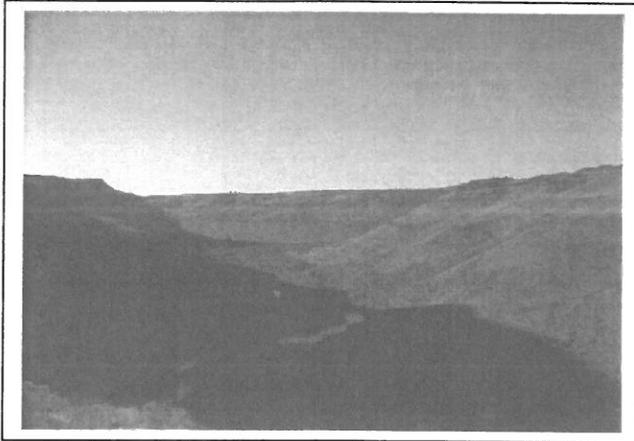


Photo 1 (left) – View from Juniper Canyon looking downstream, showing its relationship to the Columbia River. In the background are multiple basalt outcrops on the Washington side of the river typical of rock formations assigned to the Columbia River Basalt Group (CRBG).

Regionally, the CRBG is comprised of six (6) formations which are divided further into multiple members, some of which subsequently have been subdivided into individual flow events grouped according to identifiable variations in lithology, geochemistry and magnetic polarity.

Series	Group	Formation	Member	Isotopic Age (m. y.)	Magnetic Polarity
Cenozoic	Columbia River Basalt Group	Saddle Mountains Basalt	Lower Monumental Member	6	N
			Ice Harbor Member	8.5	
			Basalt of Goose Island		N
			Basalt of Martindale		R
			Basalt of Basin City		N
			Buford Member		R
			Elephant Mountain Member	10.5	R,T
			Pomona Member	12	R
			Esquatzel Member		N
			Weissnefels Ridge Member		
			Basalt of Slippery Rock		N
			Basalt of Teamle Creek		N
			Basalt of Lewiston Orchards		N
			Basalt of Cloverland		N
			Asotin Member	13	
			Basalt of Huntzinger		N
			Wilber Creek Member		
			Basalt of Lapwai		N
		Basalt of Wahluke		N	
		Umatilla Member		N	
		Basalt of Sillusi		N	
		Basalt of Umatilla Member		N	
		Wanapum Basalt	Priest Rapids Member	14.5	
			Basalt of Lolo		R
			Basalt of Rosalia		R
			Roza Member		T,R
			Shumaker Creek Member		N
			Frenchman Springs Member		
			Basalt of Lyons Ferry		N
			Basalt of Sentinel Gap		N
			Basalt of Sand Hollow	15.3	N
			Basalt of Silver Falls		N,E
			Basalt of Ginkgo		E
			Basalt of Palouse Falls		E
			Eckler Mountain Member		
			Basalt of Dodge		N
		Basalt of Robinette Mountain		N	
		Vantage Horizon			
		Grande Ronde Basalt	Member of Sentinel Butte	15.6	
			Member of Slack Canyon		
			Member of Field Springs		N
			Member of Winter Water		
			Member of Umtanum		
			Member of Ordey		
			Member of Armstrong Canyon		
Member of Meyer Ridge					
Member of Grouse Creek			R		
Member of Wapshilla Ridge					
Member of Mr. Horrible					
Member of China Creek			N		
Member of Downey Gulch					
Member of Center Creek					
Member of Rogersburg			R		
Member of Teepee Butte					
Member of Buckhorn Springs	16.5				
Imnaha Basalt			R ₁		
			T		
			N _n		
		17.5	R _n		

(Reference: SP Reidel, VG Johnson, FA Spang; Natural Gas Storage in Basalt Aquifers of the Columbia Basin, Pacific Northwest USA: A Guide to Site Characterization; Pacific Northwest National Laboratory; US Department of Energy Contract DE-AC06-76RL01830, August 2002).

Nomenclature of the Columbia River Basalt Group (from Reidel and others, 2002)

The internal features of a CRBG lava flow typically consist of three (3) zones. Listed perpendicular to flow, vertically from top to bottom, is an upper vesicular and/or brecciated zone, a middle portion that is massive and dense, and a flow bottom that often contains rubble, vesicles, breccia or basalt “pillows”. The flow interiors are usually impermeable to the transmission of water unless fractured or faulted after deposition, whereas the top and bottom flow zones can be quite porous and permeable.

Rocks exposed in the east side of Juniper Canyon have been assigned to the Sentinel Gap member of the Wanapum Basalt formation. However, detailed information regarding the structure of individual lava flows at this proposed site have yet to be investigated. Two prominent basalt cliffs were observed on the east side of the canyon (Photo 2 & 3). These steep colonnades of resistant basalt may represent the interior flow zones of two distinct lava flows, with the intervening, more gentle slopes being upper and/or base zones of variable porosity and permeability.

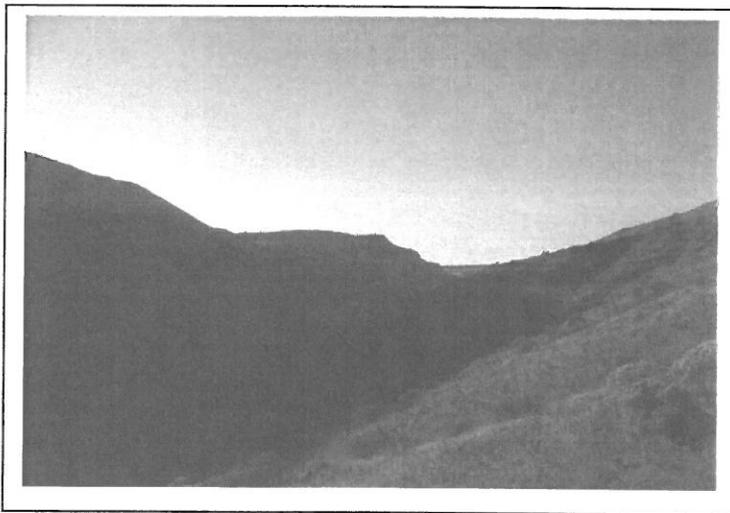
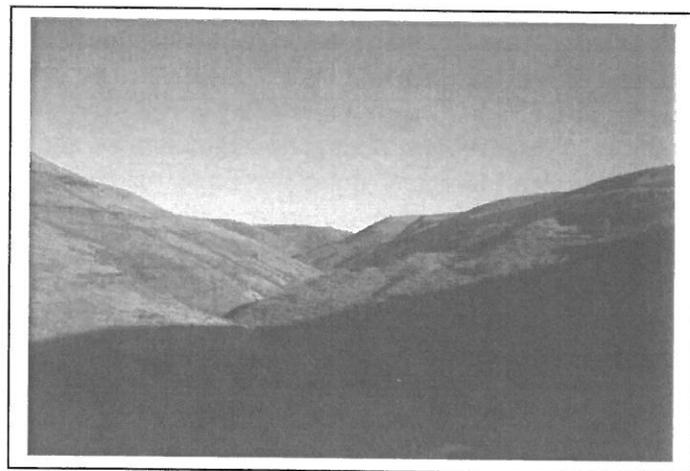


Photo 2 (left) - View looking downstream toward the proposed dam site. Shown on the right (east) side of Juniper Canyon are two basalt cliffs of resistant rock separated by grass covered slopes.

Photo 3 (right) - View looking upstream from proposed dam site. Note the lower two horizontal outcrops of basalt on the east side of Juniper Canyon.



Thick deposits of fine sand also were observed on the opposite, west side of the canyon (Photo 4). The sand is relatively uniform and contains rounded quartz grains as a large percentage of the total sample. The sand is believed to belong to the Hanford formation, a remnant of Pleistocene flooding and outwash from large glacial lakes (Missoula Floods). It is not known whether the sand has been reworked by prevailing winds or whether it represents an in-situ flood deposit. Due to its mass, the sand effectively hides from view much of the underlying rock on the west side of the canyon.

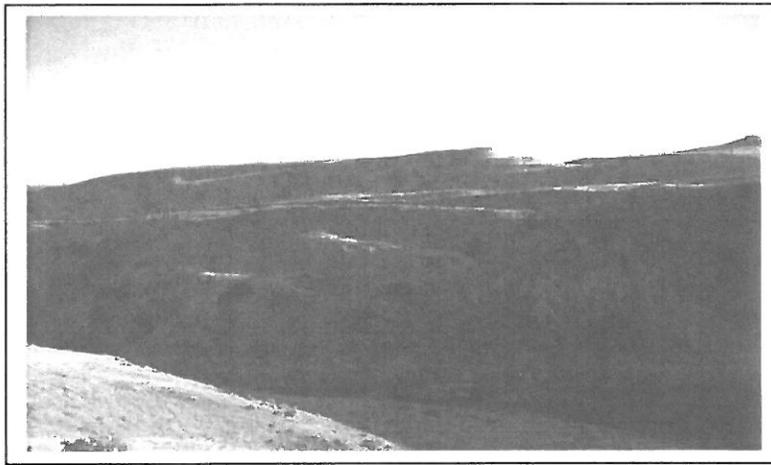


Photo 4 (10/30/06): West side of Juniper Canyon near the proposed dam site. The rounded, hummocky features highlighted by the setting sun are large dunes of fine sand that extend above the floor of the canyon several hundred feet to cover the underlying bedrock.

A detailed geological and geotechnical investigation will be required to determine the suitability of the bedrock and interlayered zones on both sides of the canyon for construction of a RCC dam impounding a high-head reservoir without creating excessive seepage. A large reverse fault zone of Quaternary age exists near the site in the vicinity of Wallula Gap. Juniper Canyon itself may represent a fault or shear zone that if verified, would require additional investigation with regard to seismic design for construction of a dam at this site.

Figure 3 is a map of Juniper Canyon and surrounding area geology.

Recommendations

Based on an initial assessment of the site and available information, construction of a storage reservoir at the Juniper Canyon site appears to be a potentially viable project deserving of further investigation. However, considerable information still needs to be obtained and understood before feasibility can be certain. Additional data is needed to better understand:

1. The suitability of the foundation and abutments
2. Availability of construction material
3. Construction options and their benefit/cost ratios
4. Environmental concerns
5. Suitability of reservoir geology and the potential for reservoir losses
6. Identification of permitting and other jurisdictional requirements
7. Project cost and funding options
8. Identification of design issues, including hydrologic and seismic criteria.

In order to fully understand the available options and feasibility for construction of a Juniper Canyon storage facility it will be necessary to fund a feasibility study. The study would consider the various options for dam construction, environmental concerns, jurisdictional issues, potential benefits, and potential issues that may require mitigation. These types of studies are typically completed by qualified, full service engineering consultants. If funds are appropriated for such a study, the process would be to issue a "Request for Proposal" that would be broken out into two main parts: (1) detailed explanation of the consultant's process and timelines, and (2) detailed explanation of qualifications and cost. A final contract should be structured in a manner that breaks the investigation into several logical parts. Each part would stand as a subset of the entire contract so that, depending on the results of the subset, the entire contract could be terminated if the results of a subset indicate the project to be not feasible. In that manner unwarranted expenditures can be avoided.

Oversight for management of the study could be given to the Oregon Water Resources Department (OWRD). OWRD administers a statewide dam safety program staffed by engineers with dam design and construction experience. OWRD would coordinate closely with local government, local water users and other interests.

The expected cost for a completed feasibility study is \$250,000.

PEAK DISCHARGES FOR SELECTED FREQUENCIES

Report prepared for: autodelin
 Time: 11:59

Date: 07/20/2007

Watershed Name: JUNIPER CAN

PEAK DISCHARGE CALCULATION BY PREDICTION EQUATION

Peak discharges for the ungaged watershed have been determined from a set of hydrologic prediction equations derived using generalized least squares. The models relate peak discharges to physical watershed characteristics such as area and precipitation. The equations take this form:

$$Q(T) = (10.0^{C0(T)}) * (CHR1^{C1(T)}) * \dots * (CHRN^{Cn(T)})$$

- Q(T) = Peak Discharge for Return Period T
 Cx(T) = Coefficient x for Return Period T
 CHR1 = The First Watershed Characteristic
 CHRN = The nth Watershed Characteristic

Note: * = multiplication, ^ = exponentiation

For this ungaged watershed, peak discharges were estimated using prediction equations for this flood region:

EAST SIDE WATERSHEDS - NORTH CENTRAL

Prediction Equation for East Side Watersheds - North Central

$$Q(T) = (10.0^{C0(T)}) * (X1^{C1(T)}) * (X2^{C2(T)}) * (X3^{C3(T)}) * (X4^{C4(T)}) * (X5^{C5(T)})$$

- Q(T) = Peak Discharge for Return Period T
 Cx(T) = Coefficient x for Return Period T
 X1 = Drainage area (square miles)
 X2 = Mean January precipitation (inches)
 X3 = Mean July precipitation (inches)
 X4 = Soil storage capacity (inches)
 X5 =

Note: * = multiplication, ^ = exponentiation

Prediction Equation Coefficients

Return Period T	Coefficients					
T	C0(T)	C1(T)	C2(T)	C3(T)	C4(T)	C5(T)
2	1.500E+00	7.947E-01	1.335E+00	-5.420E-01	1.337E+00	
5	2.175E+00	7.783E-01	1.037E+00	-7.030E-01	1.615E+00	
10	2.402E+00	7.706E-01	8.967E-01	-8.129E-01	1.622E+00	
20	2.533E+00	7.638E-01	7.993E-01	-9.225E-01	1.574E+00	
25	2.565E+00	7.617E-01	7.737E-01	-9.569E-01	1.556E+00	
50	2.648E+00	7.559E-01	7.050E-01	-1.059E+00	1.499E+00	
100	2.716E+00	7.507E-01	6.468E-01	-1.154E+00	1.445E+00	
500	2.847E+00	7.407E-01	5.300E-01	-1.348E+00	1.330E+00	

Required Watershed Characteristics

Drainage area	(square miles)	68.400
Mean January precipitation	(inches)	2.090

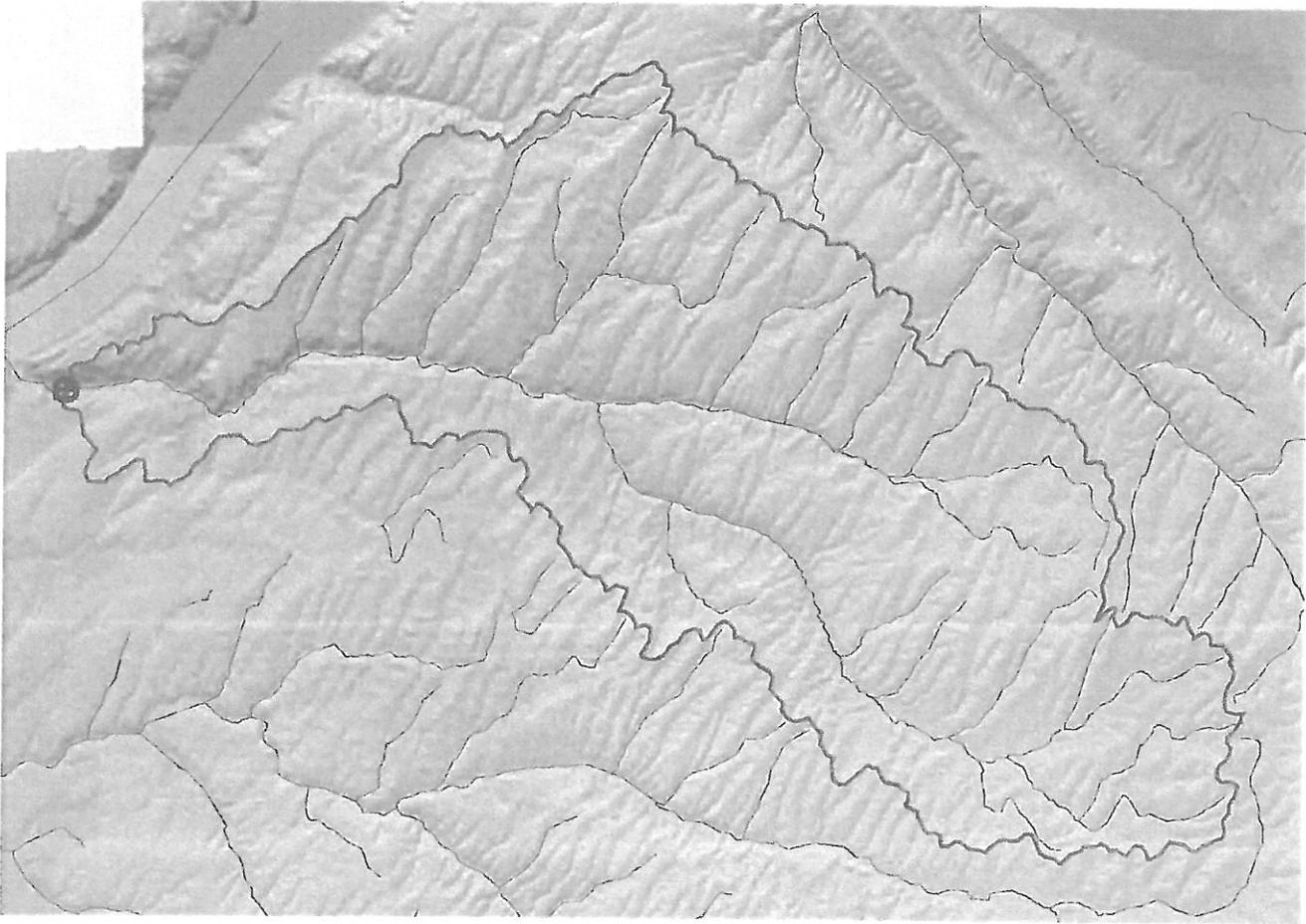
Mean July precipitation	(inches)	0.400
Soil storage capacity	(inches)	0.180

PEAK DISCHARGE ESTIMATES BASED ON PREDICTION EQUATIONS

Return Period years	Peak Flow cfs	95% Lower Limit cfs	Confidence Upper Limit cfs
2	403	127	1290
5	1030	436	2430
10	1660	776	3540
20	2430	1170	5040
25	2710	1310	5620
50	3680	1730	7830
100	4830	2170	10800
500	8350	3170	22000

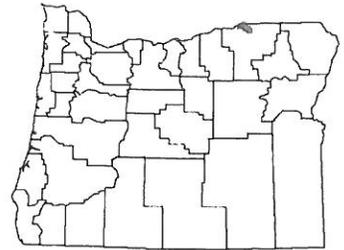
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0 1 mile

- ⊕ Four point
- Watershed boundary



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



Report and output shapefile is available for 7 days at:
<http://www1.wrd.state.or.us/files/wars/070720.115958.zip>



COLUMBIA RIVER-UMATILLA SOLUTIONS TASKFORCE

DECLARATION OF COOPERATION

February, 2013

I. Background, Project Purpose and How We Will Work Together

Whereas: There is a great need for additional jobs and economic activity in rural Oregon, and

Whereas: There is an opportunity to support and enhance continued salmon and native fish recovery efforts in the mainstem of the Columbia River and in the Umatilla Basin; and

Whereas: There is an opportunity to create additional economic activity through irrigated agriculture in the Umatilla Basin; and

Whereas: There is an opportunity today to build upon:

- a) Recent efforts of Umatilla Basin irrigators, public agencies, Confederated Tribes of the Umatilla Indian Reservation, and conservation interests to build working relationships and implement the Umatilla Basin Aquifer Storage and Recovery Project.
- b) Lessons learned from the State of Washington Office of the Columbia River, which has, over the last six years, developed or worked on 40 projects to increase Columbia River water utilization for in-stream as well as out-of-stream uses.
- c) The many studies and actions related to salmon recovery in the Umatilla Basin and main stem of the Columbia River,
- d) The State's new Integrated Water Resource Strategy

Therefore: Governor Kitzhaber has designated as an "Oregon Solutions" project the Columbia River – Umatilla Solutions Taskforce, convened on the Governor's behalf by: Umatilla County Commissioner Dennis Doherty and Richard Whitman, the Governor's Natural Resources Advisor. Oregon Solutions projects are, by Oregon Statute, designed to help support a sustainable economy, sustainable community, and sustainable environment.

We, the members of the Columbia River – Umatilla Solutions Taskforce, subscribe to the following objectives:

1. Identify options to increase utilization of Columbia River water for in-stream and out-of-stream uses in the Umatilla Basin without negatively impacting instream flows needed for fish species. The options considered should include Oregon-only actions, as well as those requiring joint agreements or actions with the State of Washington and/or other

states or tribes. The options considered should also include a range of short-term (less than three years to implementation) as well as longer-term options.

2. Develop and evaluate these options according to a set of criteria adopted by the Solutions Taskforce. Options should be as geographically specific as possible, and developed with an eye toward optimizing:
 - a. technical feasibility,
 - b. economic feasibility,
 - c. legal feasibility, and
 - d. political feasibility

3. After evaluating options, develop an action plan that includes:
 - a. Options for which there is consensus to move forward;
 - b. Options for which there is not consensus but enough promise to warrant further work and discussion; and
 - c. Statutory, administrative rule, or institutional action, if any are needed, to implement the recommended options.

4. The package of consensus options will, as a whole, result in both economic and environmental benefits, including aquifer restoration, tributary streamflow enhancement, and/or mainstem flow enhancement.

5. The package of consensus options should support, rather than impede, other water-related planning efforts such as:
 - a. The Tribal Water Rights Settlement discussions
 - b. The Basin 2050 Water Plan
 - c. Columbia River Salmon and Steelhead Recovery plans
 - d. The State's Integrated Water Resources Strategy
 - e. Umatilla Groundwater Management Area Action Plan

6. The package of consensus options will be provided to the Governor, The Oregon Legislature, and the Washington Department of Ecology Office of the Columbia River in December 2012 to support informed policy decisions and project development.

We also agree to the following principles on how we will work together:

1. **We** each commit to help this group develop workable solutions, both long-term and near-term, and will do our part in helping to implement those solutions.
2. **We** will operate by consensus, striving to jointly develop a list of actions that we can *all* support, and which will be part of a Declaration of Cooperation that we can all sign.
3. **We** recognize that for a solution or combination of solutions to be implemented, they will need to be acceptable to other parties at the table. We will therefore work hard to find solutions that are mutually satisfactory.
4. **We** accept our responsibility to raise issues or concerns with the Solutions Taskforce, rather than outside the group. We also agree that the integrity of the Solutions Taskforce requires each of us to work within this process, rather than seek to advance an independent interest, position or preferred outcome through the media or other forums.
5. Differences in opinion are to be expected in a group with such diverse perspectives. We won't shy away from those differences, but will work hard to reconcile them.
6. **We** will work hard to make sure others feel that their interests have been adequately heard and addressed in reaching a group agreement. Until the signed Declaration of Cooperation, we will be careful not to represent other's positions in a public forum..
7. **We** will conduct ourselves with civility and respect. We will listen (and not interrupt) when others are talking. During Solutions Taskforce meetings, we will wait to be recognized by one of the two Conveners before speaking. We'll respect each other's time by being concise and on-point with our own remarks.
8. **We** are each committed to this process, making the Solutions Task Force meetings a priority for our calendars, arriving on time, reviewing necessary materials, and helping the group reach timely decisions. It also means not undermining agreements of the task force in other forums.
9. **We** are committed to both representing and also "bringing along" our own organizations as the Solutions process moves forward and decisions are made.
10. **M** meetings will be open to the public, and there may be specific times made available for comments from the audience, but generally speaking the participation in discussions will be limited to Task Force members and invited guests.

II. Overall Strategy and Action Plan

The Columbia River-Umatilla Solutions Taskforce considered nearly 30 separate options since June 2012, utilizing survey-level information to screen those options against four criteria: a) Economic development impacts, b) Ecological impacts, c) Technical, legal, and political feasibility, and d) Economic feasibility.

The result was a set of consensus solutions that, taken together, we believe can result in mutual benefits for both agricultural economic development and ecological stream flows. The group is not recommending changes to existing fish protection laws. Many of these solutions could be implemented in the short term (1-5 years), and many of them can be implemented without the need for interstate agreements.

**We emphasize that the consensus for moving forward on these options does not mean a carte blanche approval for implementing an option regardless of the ultimate specifics or parameters of the action. Rather, it represents a *good-faith* agreement that these are the options we believe have the best chance of success and we recommend taking the next steps toward determining and enhancing their technical, economic, and political feasibility. The options fall under three basic strategies:

- **Develop additional water storage capacity.** We need to develop both in the short and long term additional capacity for storing Columbia River water during winter months, for later use during irrigation and fish migration seasons. This strategy includes both aquifer storage and above-ground storage, primarily in Oregon. While possible joint investments in large storage sites in Washington or Idaho could become more viable over the next year, we are not recommending specific action on those options at this time.
- **Improve water management.** Using water more efficiently and more productively will help us get the most value in the basin from the water we have. This strategy includes greater investments in conservation practices, potential transfers of developed water rights, and improved water transaction mechanisms to move water between users and uses.
- **Develop a stronger interstate approach to Columbia River water.** Some options depend upon interstate agreements about protecting newly stored or conserved water as it flows through Washington or Idaho. We need the institutional capacity to develop these agreements and explore longer term opportunities for potential joint-investments in State of Washington and elsewhere in new large (up to 1 million acre-feet) water storage projects. It is also important to coordinate with discussions related to the Columbia River Treaty Review.

Governance going forward

Other opportunities may become available, and the consensus options we've identified may change as new information becomes available. The current description of these options should not preclude flexibility going forward.

To ensure appropriate follow-up and implementation of these strategies going forward, we need the institutional and staffing capacity for recommended Columbia River planning, water conservation, instream and out-of-stream water development, and interstate agreements. A structured discussion with the appropriate stakeholder representation is needed to further develop the longer term institutional framework and capacity to address these issues and opportunities, and to fully develop the strategies and options recommended, below.

III. **Consensus Options for Developing Additional Storage Capacity**

- Testing and Completion of the Stage I Umatilla Basin Aquifer Recovery Project

The State of Oregon has invested \$3 million in the Umatilla Basin, to facilitate the preliminary design, and build out of the first Columbia River recharge project. Remaining work is to test recovery and utilization of realized alluvial storage capacity, and identify if any additional storage capacity over what is currently developed can be developed in the future.

Next steps:

- Umatilla Basin Water Commission is currently working with Westland Irrigation District to develop a contract for an initial 8,000 acre-feet from the Aquifer Recovery project. This initial work would need to be coordinated with Confederated Tribes of the Umatilla Indian Reservation to ensure compatibility with the Tribal Water Rights Settlement discussions.
- Continued discussion of *net environmental benefit* requirements that would apply if there is public finance of this project. This policy is being addressed on a state-wide basis by a work group convened by the Governor's office, though the CRUST has taken no position on whether it supports that workgroup's conclusions.
- A longer term option, building upon the current aquifer recovery project, is to develop additional aquifer storage capacity in the region, up to 100,000 acre feet.

Time Frame: Short term, should be implementable within 3 years.

Budget Needs: No specific request at this time.

- Wallowa Lake Dam Repair

Summary: The Wallowa Lake Dam is owned by the Associated Ditch Company and is an old concrete dam in poor condition. For safety reasons, water levels in the lake have been significantly reduced, and repair of the dam could allow higher lake levels and subsequent release of 4,000-14,000 acre-feet of additional stored water during irrigation season. This project's strong support is based upon the project's intended purpose to benefit both in-stream habitat for fish in the Grande Ronde basin as well as provide additional water for irrigation to Umatilla Basin irrigators on a one-for-one basis as it ultimately flows into the Columbia River.

This project is a high priority for Wallowa County for flood protection purposes, and has been actively pursued and supported by the Umatilla County Critical Groundwater Task Force. It is seen as a model to show how water users in downstream regions statewide can work with partners in other connected watersheds or other regions on multi-gain projects. In addition, the instream benefits of this project can be enhanced through conservation investments described in a separate option described below.

Next Steps:

- Agreement from Associated Ditch Company to work with other stakeholders, including Umatilla Basin irrigators, other public agencies.
- Collaborative process to define project parameters, address fish passage and other design issues, and identify financing sources.
- Develop financing package for repairs, including potential State bonding authority and private (irrigator) commitments for purchase of water.
- Agreements with the State of Washington will be needed to protect the water, as it flows through Washington.
- Some additional study and design work, amending or augmenting previous design work will likely be needed.

Time frame: Relatively short term. Assuming successful agreements and financing, construction could be completed within 5 years.

Budget Needs: Up to \$250,000 for additional feasibility work.

- New Juniper Canyon Storage Reservoir

Summary: A proposed dam in Juniper Canyon, an intermittent stream approximately 25 miles northwest of Pendleton and one mile upstream from the Columbia River. The potential storage reservoir is estimated at 49,000 acre-feet of water, which would be pumped from the Columbia during winter months. Current law requires a 25% net environmental benefit if there is public financing involved.

Next Steps:

- A more detailed appraisal study of the site is needed. OWRD will contract for services with appropriate technical experts to complete this study, contingent upon available funding. This appraisal would include: geotechnical evaluation, hydrology evaluation, environmental impact evaluation, property ownership status, historical preservation evaluation, conceptual design, project critical path, and economic assessment.
- The appraisal study, which is what the CRUST is recommending, provides initial information to determine if further consideration is warranted. Additional analysis would be required to determine ultimate feasibility of the project. Note: Other potential storage facilities (either new or expanded) could be considered, including Carty Reservoir, Malheur Dam, and Sand Hollow, depending upon the availability of funds, or if the result of the appraisal study of Juniper Canyon, which is currently seen as the preferred option among these storage sites, is negative.

Time Frame: Long term – construction would be 5-10 years out. Appraisal study could be completed within one year.

Budget Needs: Additional feasibility work. Estimate is for \$250,000, based upon experience of Washington's Columbia River Program appraisal studies.

IV. Consensus options for Improving Water Management

- Leasing Unused Developed Washington Water Rights

Summary: The Port of Walla Walla has approximately 4700 acre-feet worth of fully-developed water rights that it has temporarily leased to the Washington Trust Water Rights Program. Currently, about 1500 acre-feet of those rights could be leased at an estimated \$105 per acre-foot to stay in stream and then used as mitigation for acquiring Oregon time-limited water rights for Columbia River withdrawal. (Additional amounts may become available over time.) The rights would be temporary for up to 8 years, with the potential to interrupt their availability. This option has been discussed with the Washington Policy Advisory Group which supports moving forward to a formal proposal.

It has been confirmed by Washington's Department of Ecology that these rights were not purchased by BPA for meeting Bi-op instream commitments, which means that they are eligible to be used for mitigation purposes. Use of these water rights is not subject to the requirement of Washington's Columbia River program that one-third of the stored water be used instream.

There may be additional opportunities beyond the Port of Walla Walla rights. For example, there are additional water rights on the John Day Pool, held by the Klickitat P.U.D. The P.U.D has indicated an interest in possible leasing or marketing of those rights through the Washington Trust Water Rights program, though it is currently unclear how those rights might be used as mitigation. Working through the Washington Trust Water Rights program water could possibly result in additional water for use in Oregon.

Next Steps:

- Continued discussion with State of Washington and their Trust Water Rights Program to work through details of a lease.
- Determination by Oregon Water Resources Department what type of temporary permit or lease would be issued on the Oregon side, using the Washington rights as mitigation
- The marketing of these rights to Oregon water users, and the development of agreements for leasing. Once potential lessees are identified, the development of a master lease with the Washington Trust Water Rights program on a temporary basis.

Time Frame: Short term, could be done within 1year.

Budget Needs: None at this time.

- Pilot Transaction for a proposed Umatilla Basin Water Bank and Brokerage

Summary: Conduct and analyze a model transaction (using current law and rules) during the 2013 irrigation season that represents a type of transaction that could be facilitated through a water bank, which would be intended to facilitate transactions in an effective, time-sensitive manner. The pilot would be administered by the Umatilla Basin Water Commission or other entity, and would be subject to existing legal requirements. .

Next Steps:

- Umatilla Basin Water Commission to identify and get approvals for pilot water transaction or transactions.
- Conduct transactions for 2013 season. Have group of stakeholders, including OWRD, conservations interests, irrigators, review the results Building upon the pilot transaction(s), convene a broader stakeholder group to continue discussions on whether a water bank should be developed.

Time Frame: Short Term, the pilot transaction could be accomplished in 2013.

Budget Needs: None.

- Water Conservation investments in Wallowa Basin

Summary: Water conservation measures related to agricultural use in the Wallowa basin, and potentially other parts of the Grand Ronde basin, might provide additional water for both ecological flows and potential irrigation in the Umatilla Basin. There may be some additional conservation investments in the Umatilla Basin as well, but it appears there may be greater opportunity in the Wallowa Basin and larger Grand Ronde basin, which may not have as many new competing needs for water. Additional water in these basins would also provide more stream miles with fish flow benefits. The total volume saved is unknown. The Wallowa Soil and Water Conservation district has a current conservation program which is studying target watersheds.

This option would be subject to the Oregon Conserved Water Law, which would require a percentage of the water to be saved in-stream. It would enhance the instream flow benefits related to the Wallowa Dam Repair project, described above.

Next Steps:

- Completion of the target watershed analysis by Wallowa County SWCD

- Discussions with Wallowa SWCD, Wallowa County, Freshwater Trust, and OWRD to determine potential investments, savings, and subsequent out-of-stream uses.
- Agreements with the State of Washington will be needed to protect the flow of water, as it flows into the Snake and Columbia Rivers, in Washington.

Time Frame: Short term – could be completed in 1-3 years.

Budget Needs: \$200,000-\$400,000 for matching funds to complete water conservation projects

V. **Consensus actions for developing a stronger interstate approach to Columbia River water**

- Agreements with State of Washington (and/or Idaho) to protect water conserved or stored in Oregon

Summary: Water newly conserved or stored in Oregon (see: Wallowa Dam and Wallowa Basin Conservation options) which flows through Idaho and Washington prior to becoming available to the Umatilla Basin runs the risk of being appropriated by Washington irrigators, thus erasing any benefit to Oregon users. Recent discussions with the Columbia River Policy Advisory Group in Washington indicate their interest in working out an agreement to protect that water as it flows through Washington.

Next steps:

- Further discussion with State of Washington Policy Advisory Group.
- Develop interstate agreement.

Time Frame: Short term, should be implementable within 2 years.

Budget Needs: Funding for interstate policy position to help negotiate this agreement

- Interstate discussions on potential joint investments or joint utilization of water storage sites.

Summary: Several of the options considered by the C.R.U.S.T. involve joint investment in large (1 million acre-feet-plus) water storage sites for winter storage and release during irrigation season. There are potential sites being studied in Washington as well as Idaho. In addition, there are other opportunities related to Canadian water and the Columbia River Treaty.

**Most of the discussion of the CRUST focused on partnership with the State of Washington. None of the potential Washington storage sites were ranked as consensus options for moving ahead at this time, in large part because of economic and environmental feasibility concerns. All are in the appraisal level analysis stage, so more information may become available. In addition there have been recent overtures from the State of Idaho that the CRUST has neither discussed nor evaluated. Canadian water options were also not listed or ranked, though there are currently on-going discussions exploring this possibility, both within and outside of the Canada Treaty discussions.*

The State of Washington has indicated the physical layout of the Crab Creek site in Washington may be altered and subject to a new appraisal study in 2013, with a new design that they believe could significantly reduce the footprint and related environmental mitigation issues.

The State of Idaho is doing preliminary geologic testing of a proposed Weiser River storage site, and this also should be completed in 2013.

Next steps:

- Continue discussions with Washington and Idaho regarding the appraisal work being conducted on potential new storage sites. Further explore their interest in potential joint investments and utilization.
- Depending upon the results of these or future preliminary studies, Oregon may consider joining one or both states in proposing to Congress authorization for a more complete feasibility analysis. Such a feasibility analysis would involve State matching funds.

Time Frame: Very long term, could take 10-20 years for completion.

Budget Needs: Funding for interstate policy position (see below)

- Develop Oregon institutional capacity and staffing to pursue regional agreements and potential interstate investments in water development projects.

Summary: Oregon needs to provide staffing to implement the consensus actions describe in parts III, IV, and V of this Declaration. For 2013, a minimum of one new senior level position should be funded in the OWRD budget to begin building this capacity, and additional support is desirable.

For the longer term, the Governor’s Natural Resources office will convene a work group over the interim to detail the appropriate structure and elements of a statewide program of new water storage, conservation, utilization, and instream flow protections and augmentation. That effort will include an advisory board made up of appropriate stakeholders.

Next steps:

- Oregon 2013 Legislative session budget approval
- Develop program goals and position description.
- Structured stakeholder discussion through the Governor’s Office, to develop the longer-term institutional framework for multi-use water development

Time Frame: Short term, should be implementable this next biennium.

Budget Needs: Funding for positions

VI. **Other Options Considered by the Columbia River-Umatilla Solutions Taskforce.**

The *Solutions Taskforce* identified an initial list of 29 different options, trying to be as inclusive as possible, so that any opportunities for mutual gain were considered.

Those options for which there was consensus to move forward are listed above and we recommend focusing our efforts on those options at this time. Other options, listed below, were considered but for various reasons there was not consensus to move forward with them. To keep the focus on the consensus agenda and give it the best chance for success, we jointly agree not to develop or support legislation in the 2013 Legislative Session that would promote spring and summer Columbia River withdrawals, or any of the options listed below.

- Providing access to Columbia River water in spring and summer but only when flows exceed biological target flows for fish.
- Construction of new reservoir on South Fork Umatilla River
- Construction of new reservoir on Bear Creek
- Expansion of Cold Springs Reservoir
- Expansion of McKay Dam and Reservoir
- Managing Columbia River to increase flow in the Spring and Summer
- Additional draw-down of Lake Roosevelt
- Revised Management of Run-of-River Reservoirs, including additional withdrawals in spring and summer
- Evaluate operation of John Day Pool at Minimum Operating Pool, or reduced levels in order to increase velocity of water flow in Spring and Summer
- Washington State large storage site candidates: Crab Creek (at currently proposed footprint), Ninemile Flat, and Goose Lake.
- Washington investment in Oregon Storage Options
- Washington conservation projects
- Washington aquifer storage

VII. Governance recommendations going forward: How we will go about getting things done.

We agree on the following institutional framework for how we will go about on-going collaboration, project planning, and implementation of priority solutions. We also believe there are relatively short-term action steps possible that should be followed up immediately to both produce near-term tangible results, and – importantly - also help strengthen collaborative relationships going forward. However, other opportunities may become available, and the consensus options we’ve identified may change as new information becomes available. The identification of these options should not preclude flexibility of these efforts going forward.

- A. Oregon needs to provide staffing to implement the consensus actions describe in parts III, IV, and V of this Declaration. For 2013, a minimum of one new senior level position should be funded in the OWRD budget to begin building this capacity, and additional support is desirable.

- B. For the longer term, the Governor’s Natural Resources office will convene a work group over the interim to detail the appropriate structure and elements of a statewide OWRD program of new water storage, conservation, utilization, and instream flow protections and augmentation . That effort will include an advisory board made up of appropriate stakeholders.

- C. The Columbia River-Umatilla Solutions Taskforce may be convened as needed during the 2013 Legislative Session. It will also meet subsequent to the 2013 Legislative session in the early fall of 2013, to review progress on the workplan and consensus options, and revise any agreements as necessary. Once Executive or Legislative action is taken on the recommendations for long-term institutional capacity, it is envisioned the CRUST will be replaced by an advisory group as noted above.

- D. Wallowa Dam Oregon Solutions team
 - A newly configured group of stakeholders will be convened to work specifically on the Wallowa Dam project, beginning in early 2013.

VIII. Budget needed to support the consensus options and governance recommendations (2013-2015).

- OWRD Staff Position and support for Interstate/Columbia related efforts \$250,000 - \$400,000

- Feasibility and Design Work for Storage \$500,000
 - Wallowa Dam
 - Juniper Canyon
 - Other sites as funds are available

 - Initially appraisal level work will be completed that will identify any fatal flaws that can put projects on hold or eliminate them from further consideration. Additionally, these appraisal level investigations are intended to analyze elements of the projects to a point that work plans, timelines and cost estimates for comprehensive feasibility work can be prepared and feasibility investigative work can be implemented. Also included will be various construction alternatives, general estimates for cost of the various construction alternatives, and a list of the various elements of the projects that require

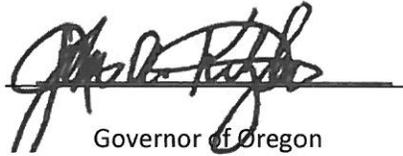
comprehensive feasibility analysis. If appraisal work indicates proposed projects warrant additional study, to the extent resources are available feasibility studies will be funded that will provide the information needed for project implementation

- While there will need to be financing mechanisms for ultimate construction of storage options (and potentially other options, the amount, nature, and conditions of this financing have not been agreed upon by the Solutions Task Force.

- Matching funds for Additional Water Conservation \$200,000-\$400,000

IX. Declaration

This Declaration of Cooperation, while not a binding legal contract, is evidence to and a statement of the good faith and commitment of the undersigned parties. The undersigned parties to this Declaration of Cooperation have, through a collaborative process, agreed and pledge their cooperation to the above findings and actions:



Governor of Oregon



Governors Natural Resource Advisor



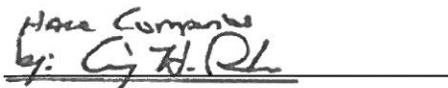
Umatilla County Commission



American Rivers



Oregon Water Resources Department

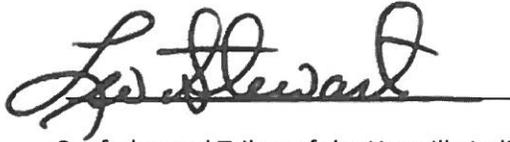


Hale Companies
by: C. H. R.

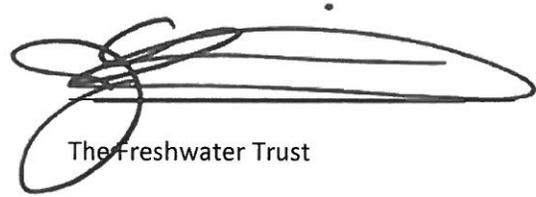
Hale Companies



Bonneville Power Administration



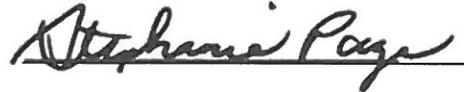
Confederated Tribes of the Umatilla Indian Reservation



The Freshwater Trust



Oregon office of the NW Power and Cons. Council



Oregon Department of Agriculture



Blue Mountain Community College



Oregon Department of Fish and Wildlife



Port of Morrow



OSU College of Agricultural Sciences



Umatilla Electric Co-op



US Bureau of Reclamation



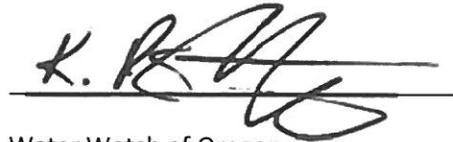
Umatilla Basin Water Commission



Washington Department of Ecology



Windy River Farms



Water Watch of Oregon

NORTHEAST OREGON WATER ASSOCIATION

VIA ELECTRONIC MAIL

April 11, 2014

Oregon Water Resources Department
Attn: Nancy Pustis
725 Summer Street NE, Suite A
Salem, OR 97301

Subject: Juniper Canyon Appraisal and Feasibility Study (Commitment of Match

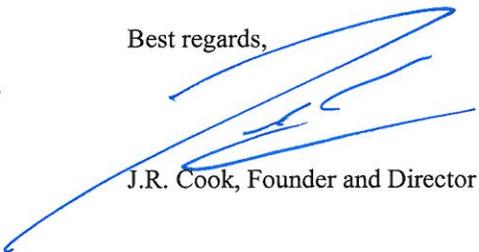
Dear Ms. Pustis

This letter serves to document that the Northeast Oregon Water Association has documentation from Integral Consulting documenting \$15,545 in expenses occurred to date on Juniper Canyon feasibility work since July 1, 2013.

Additionally, this letter serves to document and ensure that the Northeast Oregon Water Association will contribute no less than \$100,000 in personnel, travel and contractual expenses in support of the Umatilla Basin water supply efforts in conjunction with the Juniper Canyon Appraisal and Feasibility Study.

Please contact me should you have any questions.

Best regards,



J.R. Cook, Founder and Director

